Engineered for Raypak® Boilers & Water Heaters

Electronic Temperature Controllers

Raypak®
A Rheem® Company

The Hot Water Management Experts

Electronic Temperature Controllers

Engineered for Raypak® Boilers & Water Heaters

Leading-Edge Controllers

For over 60 years, Raypak's low-mass, high-recovery designs have set the standard for hot water space heating/supply boilers. To optimize performance and take full advantage of its boilers' many benefits, Raypak developed its own specialized controllers whenever standard commercial versions were not adequate. In the 1950s, Raypak led the way in load-tracking modulation, utilizing the ModuSnap controller with its Raytherm boilers. In the early 1980s, Raypak introduced the B-6000, the first true electronic central boiler/BMS system for modulating boilers.

Today, Raypak's array of temperature controllers offers such state-of-the-art features as: sequence-control of up to 40 boilers; PID technology (see below); optimized approach to outdoor reset; LonWorks or Building Management System interfacing; modulation or stage-firing control; and other energy-saving functions. **Unlike off-the-shelf controllers, Raypak's five controller models have been specially designed to maximize the performance of its leading-edge boiler systems.**

The Right Boiler for the Right Application

Raytherm® series

Rugged, outdoor proven even in the toughest environments, offers exceptional value while being the simplest unit to commission and maintain. With its atmospheric-burner, horizontal-water tube design and standard Category I (B-vent) venting for indoor applications, installation is familiar and trouble free.

Hi Delta® series

Also with a horizontal water-tube design, the unit features 100% fan-assisted combustion in on-off or multi-stage configurations. With multiple venting options and efficiencies that range from 84% to 87%, Raypak has you covered. Full onboard diagnostics in real English.

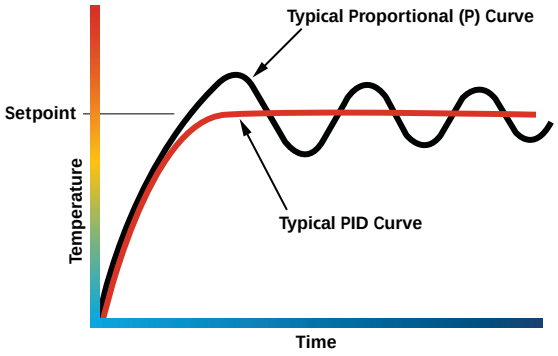
MVB® series

A vertical-tube boiler with a modulating (4:1), fan-assisted burner offers the smallest (5.4 square feet) installed footprint of its kind and efficiencies of 84% (Cat I) or 87%(Cat IV). Full onboard diagnostics in real English, storing up to 16 reported faults. Low NOx compliant in all 50 states. Lowest required minimum inlet temp 120°F. Fits through a 30" door.

XTherm™ and XFyre™ series

XTherm™ vertical condensing boiler and **XFyre**™ mod-con style boilers offer efficiencies up to 99% as well as PVC venting options. CSA outdoor and indoor rated. True modulation 4:1 XTherm and 5:1 XFyre. Meets all current Low NOx regulations. XFyre has built-in cascade control for up to 8 units. Full onboard diagnostics in real English

Using PID Technology to Maximize Performance and Efficiency



Raypak controllers feature state-of-the-art PID technology, an application of Proportional, Integral and Derivative functions in varying algorithms to optimize system performance. Other controllers on the market either do not utilize PID technology or use only the Proportional (P) function (the component that controls output in proportion to how far the monitored point is from the target temperature). Raypak's controller series also makes use of the Integral (I) function which factors in the time it takes to reach the target temperature and enhances the proportional response accordingly. Add to this the Derivative (D) function which monitors how quickly the monitored point is approaching or drifting away from the target temperature. With all three functions, a properly designed PID-based control achieves set point quickly and levels off at the target temperature with minimal over- or under-shooting. The result is maximum system efficiency and performance.

Controller Applications & Boiler Compatibility At-A-Glance:

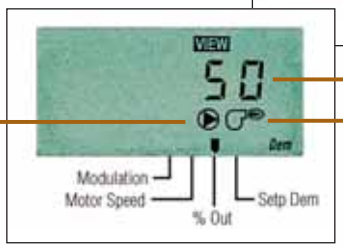
	Applications		Boilers/Water Heaters			
Controller	**Space Heating**	**Hot Water Supply**	**MVB**	**Hi Delta**	**Raytherm**	**XTherm**
TempTracker	●	●		●	●	
TempTracker Mod	●	●	●		●	●
TempTracker Mod+ Hybrid	●	●	●	●	●	●
Y-200	●	●	●	●	●	●
RayTemp		●	●	●	●	●

TempTracker | TempTracker Mod

Multi-Stage Controller | Modulating Boiler Controller

TempTracker is designed to sequence multiple boilers up to four total stages, whether it's one to four on/off boilers, two two-stage boilers, or one boiler with up to four stages. It is available factory-mounted or loose on **Hi Delta** boilers, and loose on **Raytherm** boilers.
TempTracker Mod is a single-boiler modulating control that is integral to the **MVB** and **XTherm**, optional on **Raytherm**.
Both controls can be used for space heating and hot water supply with eight application-specific modes to meet various applications, including outdoor reset for heating systems. The controls monitor and display inlet and outlet temperatures on all applications as well as monitor outdoor temperature when an outdoor reset mode is selected.

At right: TempTracker, Target Temperature View



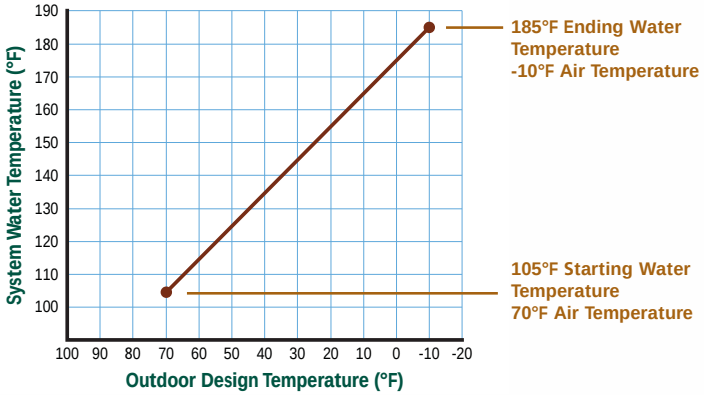
Above: Temptracker Mod, % Output View

Features

- TempTracker - 1-4 boilers/stages
  TempTracker Mod - 1 MVB (modulating) boiler, XTherm and Raytherm
- Selectable P or PID logic
- LCD display
- NEMA 1 enclosure
- Boiler inlet and outlet water sensors
- System water sensor
- Outdoor air sensor optional
- Alarm ready (pilot duty)
- CSA approved
- 24 VAC, 60 Hz, 3 VA supply power requirement
- Relay Ratings
  Stage 1: 5A @ 120 VAC
  Stages 2 to 4: 3A @ 120 VAC
- Limp-Along Feature- Ability to operate with as few as 1 of the 3 water sensors. Provides service indication when a sensor fails.
- BMS 0-10VDC setpoint control
- BMS 0-10VDC firing rate control

Fully Adjustable Outdoor Reset Slope

Raypak's custom software allows for complete adjustment of the outdoor reset slope start and end points.



Programmable Functions

- 8 programming modes for TempTracker and TempTracker Mod
- Adjustable outdoor reset ratio
- Min. system water temperature (70 °F)
- Max. system water temperature
  - Heating: 220 °F
  - DHW: 190 °F
- Temperature differential (2 to 42 °F)
- Boiler target (70 to 220 °F)
- Outdoor cutoff (35 to 85 °F)
- Boiler mass (low, med, high)
- Stage-on delay (P mode) (10 sec. to 8 min.)
- System pump-off delay (0 to 20 min.) Stage Control only
- Temperature measurement (°F or °C)
- Boiler pump off delay (0 to 20 min.) Mod Control

Ordering Information (TempTracker)	
Option No.	**Description**
B-26	2-stage setpoint
B-27	2-stage outdoor reset
B-21	4-stage setpoint
B-23	4-stage outdoor reset
B-40	Raytherm Mod
B-41	Raytherm Mod outdoor reset

TempTracker Mod+ Hybrid

Multi-Boiler Modulating Controller

The **TempTracker MOD+ Hybrid** is available as a loose option and controls up to four **MVB, XTherm, XFyre and Raytherm** modulating boilers for precise load tracking of space heating and hot water supply systems. Expand the control to 16 boilers by adding up to two six-boiler expansion modules. TempTracker Mod+ monitors and displays supply water temperatures on all applications including outdoor temperature when outdoor reset mode is selected. As an added feature, this model offers PID logic as well as automatic or manually selectable lead-lag boiler operation. During boiler servicing or in the event of a controller problem, a manual override feature can be activated to bypass programmed operation.

At right: TempTracker Mod+, Standard View

Features

- 1-4 boilers, expandable to 16 with optional expansion modules
- Selectable P or PID logic
- LCD display
- NEMA 1 enclosure
- System water and outdoor air sensors
- 365-day time clock
- Auto/manual lead-lag and enable/disable functions
- Manual override
- DHW override
- Lockable enclosure
- UL and cUL approved
- 120 VAC, 60 Hz, 12 VA supply power requirement
- Relay ratings - 1A inductive; 6A @ 120 VAC 15A total for all circuits
- Remote Setpoint (4-20 mA)
- Raypak has highly customized the TempTracker Mod+Hybrid to maximize the overall system efficiency when used with our modulating boilers and water heaters.
- Hybrid control function for multi boiler installations using condensing and non-condensing boilers.

Hybrid system using 2-MVB's and 1-XTherm

Programmable Functions

- Selectable modulating outputs (4-20 mA, 1-5 VDC, 2-10 VDC, 0-5 VDC or 0-10 VDC)
- Adjustable outdoor reset ratio (1:4 to 4:1)
- Min. system water temperature (70 to 180 °F)
- Max. system water temperature (90 to 240 °F)
- Automatic/manual lead-lag (1 to 1440 hrs.)
- Initial setpoint (70 to 240 °F)
- Outdoor cutoff (20 to 100 °F)
- Morning boost (30 min.)
- Night setback (0 to 75 °F)
- DHW override (with or without priority)
- System sensor gain (-5 to +5 °F)
- Outdoor sensor offset adjustment (-5 to +5 °F)
- Boiler gain (-10 to +10 °F)
- Boiler-on delay (0 to 60 min)
- System pump-off delay (0 to 360 min)
- Standby boiler delay (1 to 60 min)
- Temperature measurement (°F or °C)

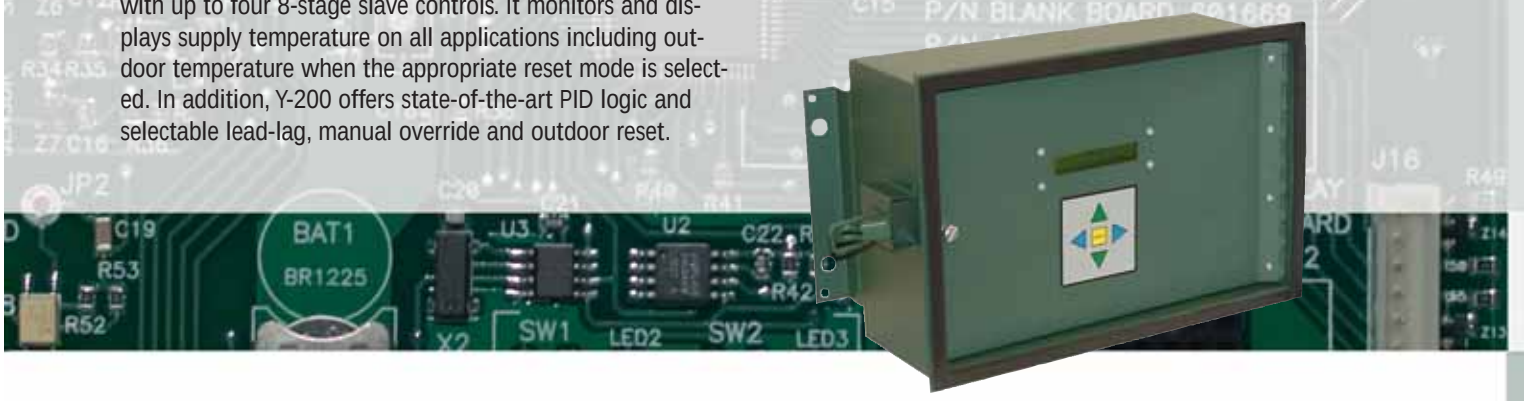
Ordering Information	
Option No.	**Description**
B-36	4 boilers
B-37	10 boilers
B-38	16 boilers
B-39	Remote setpoint module

Y-200

Multi-Stage Sequencer

Designed for use with single or multiple space heating or hot water supply systems, the Y-200 is offered in 4- and 8-stage configurations and is available loose or factory-mounted on **Hi Delta** or **Raytherm** boilers, and loose on **MVB** boilers. It is expandable up to 40 stages using an 8-stage master control with up to four 8-stage slave controls. It monitors and displays supply temperature on all applications including outdoor temperature when the appropriate reset mode is selected. In addition, Y-200 offers state-of-the-art PID logic and selectable lead-lag, manual override and outdoor reset.

Options include a build-in modem, remote set point and LonWorks® module that controls multiple boilers with one LonWorks control interface. Housed in a NEMA 3R enclosure, the Y-200 is suitable for outdoor installations.



Features

- 4 or 8 boilers/stages, expandable to 40
- Selectable P or PID logic
- LCD display
- NEMA 3R enclosure
- System water and outdoor air sensors
- 365-day time clock
- Auto/manual lead-lag and enable/disable functions
- Manual override
- Password protection
- 120 VAC, 60 Hz, 0.5A supply power requirement
- Relay Ratings - 10A @ 250 VAC
- Lockable enclosure
- UL and cUL approved

Options

- Remote setpoint (2-10 VDC or 4-20 mA)
- Modem
- Auxiliary contacts
- Alarm bell
- LonWorks® module

  Only multi-boiler sequencer LonMark® certified for LonWorks protocol interoperability. Proper order for Standard Network Variable Types (SNVT_) tags ensures smooth implementation. No external gateway required.

LONMARK® 3.3

Programmable Functions

- Adjustable outdoor reset ratio (0.01:1 to 20:1)
- Min. system water temperature (40 °F)
- Max. system water temperature (235 °F)
- Automatic/manual lead-lag (0 to 100 hrs.)
- Control band (0.5 to 10 °F)
- Initial setpoint (40 to 235 °F)
- Outdoor cutoff (32 to 200 °F)
- Outdoor cutoff deadband (1 to 10 °F)
- Morning boost
- Alternate setpoint
- Night setback
- Adjustable PID
- Boiler-on delay (0 to 5 min.)
- Stage-on delay (0 to 60 sec.)
- System pump-off delay (0 to 10 min.)
- Temperature measurement (°F or °C)

Ordering Information	
Option No.	**Description**
Y-241	**4-stages**
Y-281	**8-stages**

RayTemp™

Demand-Based DHW Controller

RayTemp is a demand-based stage set point reset controller for use with single or multiple **Raytherm**, **Hi Delta** and **MVB** hot water supply heaters and is available factory-mounted and -wired in Hi Delta units or loose for remote-mounting in single or multiple Hi Delta, MVB or Raytherm systems. RayTemp adjusts water temperature based on system demand to minimize energy consumption during off-peak times. It monitors daily and weekly hot water usage, modifying supply water temperature based upon the most recent history. As a result, unnecessary standby losses, the biggest contributor to energy waste, are eliminated. RayTemp also provides data logging capability for viewing and the ability to download up to 12 months of performance history.

Consult your local utility for possible rebates applicable to demand-based controllers, such as RayTemp.

All RayTemp models are eligible for the maximum California Energy Rebates.

RayTemp Energy Management Control By Raypak

Features

- 2 or 4 heaters/stages
- PID logic
- LCD display
- NEMA 1 enclosure
- Tank and building return sensors
- Demand profile memory
- Data logging and downloads
- Password protection
- Lockable enclosure
- Supply power requirements
  Heater-mounted: 24 VAC, 50/60 Hz, 0.8 A
  Wall-mounted: 120 VAC, 50/60 Hz, 0.17 A
- Relay ratings - 1.5A @ 24 VAC

Programmable Functions

- Up to 4 stages of control
- Lead/Lag
- Morning boost and night setback
- 7-day learning cycle

Ordering Information	
Option No.	**Description**
B-24	**2-stages**
B-25	**4-stages**

Options

- Modem for remote monitoring and fault notification
  4-Stage model only (B-25)

Raypak ISO 9001 Registered Quality Management System

Raypak, Inc.
2151 Eastman Avenue
Oxnard, CA 93030

(805) 278-5300 • phone
(805) 872-9725 • fax

www.raypak.com

Cat. No. 5100.22C Effective 12-01-09 Replaces: 7-15-09